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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/255,777	02/23/1999	SHUNPEI YAMAZAKI	0756-1936	9041

7590

01/09/2002

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EXAMINER

BOOTH, RICHARD A

ART UNIT

PAPER NUMBER

2812

DATE MAILED: 01/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/255,777

Applicant(s)

YAMAZAKI ET AL.7

Examiner

Richard A. Booth

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 12,13,15-19,21-24,26-43,46-58,60,61,65-71 and 75-84 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12-13, 15-19, 21-24, 26-43, 46-58, 60-61, 65-71, and 75-84 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other:

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12-13, 15, 17, 23-24, 26, 28-31, 33-39, 41-43, 46, 48-58, 60--61, 65, 67-71, 75 and 77-84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang in view of Zdebel, U.S. Patent 5,154,946 and Wolf et al. and further in view of Yamazaki, U.S. Patent 4,727,044.

Chang shows the invention substantially as claimed including forming an amorphous or polysilicon semiconductor layer 34 on an insulating surface 32 with a thickness of, for example, 1000 angstroms (see column 4, lines 59-60); introducing boron 36 into the semiconductor layer so that the boron implanted region becomes at least part of the channel region (see Figure 2); forming a gate insulating film 40 on the semiconductor layer; forming a gate electrode 42 on said gate insulating film; and forming source and drain regions (46,48) by implanting boron ions 44 into the semiconductor layer using the gate electrode 42 as a self-aligning mask to form source and drain regions (see Figures 2-6 and column 4, line 55 – column 5, line 37).

Chang lacks anticipation of forming the film as amorphous silicon and then converting to polysilicon, performing the implant of the channel region as shown in Figure 2 through an insulating film, performing laser crystallization through the insulating

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film, and forming the gate insulating film using TEOS. With respect to forming the gate insulating film of TEOS, official notice has been taken of this fact in previous office actions. If applicant does not seasonably traverse the well known statement during examination, then the object of the well known statement is taken to be admitted prior art (see *In re Chevenard*, 139 F.2d 71, 60 USPQ 239 (CCPA 1943)). A seasonable challenge constitutes a demand for evidence made as soon as practicable during prosecution (see MPEP 2144.02).

With regard to the implantation in Figure 2 being formed through an insulating film, Zdbel discloses using a screen oxide prior to implantation, performing implantation, and removing the screen oxide using wet etching (see column 2, line 65 – column 3, line 40). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the screen oxide in Zdebel and remove the screen oxide in the primary reference of Chang, because as additionally taught by Wolf, the formation of screen oxides is used in order to protect the semiconductor substrate from implantation damage (see prior office actions). Wolf also teaches that depositing a polysilicon film as amorphous followed by subsequent crystallization is an improvement because the deposited surface is smoother (see previous office actions).

Concerning laser crystallization through the insulating film, Yamazaki discloses forming an insulating film over the entire semiconductor layer prior to a laser irradiation process (see column 5, lines 49-55). In view of this disclosure, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form an

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insulating film on the semiconductor film prior to irradiation because this would prevent the recombination center neutralizer from outdiffusing and would also prevent reflection. With respect to claims 23 and 41, official notice is taken that it is well known in the art to form aluminum gate electrodes.

Claims 16, 18-19, 21-22, 27, 32, 40, 47, 66, and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang in view of Zdebel, U.S. Patent 5,154,946 and Wolf et al. and further in view of Yamazaki, U.S. Patent 4,727,044 as applied to claims 12-13, 15, 17, 23-24, 26, 28-31, 33-39, 41-43, 46, 48-58, 60-61, 65, 67-71, and 77-84 above, and further in view of Han, U.S. Patent 4,599,118.

Han is applied as in paper #16 mailed 2-6-01 for the reasons of record.

### ***Response to Arguments***

Applicant's arguments filed 11-27-01 have been fully considered but they are not persuasive. Applicant argues that boron being implanted through an insulating film into at least a channel region is not shown and asks the examiner to point out where this limitation is shown. However, this rejection is not made under 35 USC 102, and the rejection under 35 USC 103 provides ample reasons and motivations as to why such a limitation is obvious. For instance, Zdebel clearly shows using an insulating film as an implant screen and Wolf provides beneficial reasons regarding why an implant screen is commonly used.

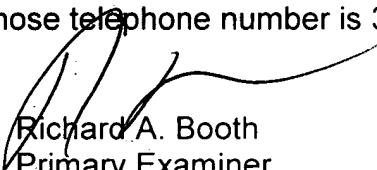
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**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A. Booth whose telephone number is 308-3446. The examiner can normally be reached on Monday-Thursday from 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on 308-3325. The fax phone numbers for the organization where this application or proceeding is assigned are 308-7724 for regular communications and 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-1782.



Richard A. Booth  
Primary Examiner  
Art Unit 2812